

REMARKS/ARGUMENTS

The Examiner provisionally rejects Claims 27, 29-47, and 49-51 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4-41 and 45-65 of copending Application No. 10/614,340. A suitable Terminal Disclaimer will be filed when the application is ready for allowance.

The Examiner rejects Claims 27, 29-47, and 49-51 under 35 U.S.C. §103(a) as being unpatentable over JP 56-058824 (“Kondou et al.”) in view of JP 58-062027 (“Moriyama et al.”), U.S. 4,810,549 to Abrams, et al., and U.S. 6,646,022 to Okazaki, et al.

The cited references fail to teach or suggest at least the following italicized features of Claim 27:

27. A method, comprising:
providing a flocked transfer sheet, a *pre-formed, self-supporting, and thermosetting* adhesive film, and a thermoplastic backing film;
thereafter laminating the flocked transfer sheet, the thermosetting adhesive film, and the backing film together to form a mold insert; and
forming the mold insert into a *three-dimensional* shape that substantially corresponds to a surface of at least a portion of a mold;
positioning the mold insert in the mold;
while the mold insert is positioned in the mold, introducing a resin into the mold to form a molded article comprising resin and the mold insert, *wherein the thermosettable adhesive film is thermoset before the introducing step.*

Kondou et al.

Kondou et al. teaches, on surface of a film sheet 2, a decorative layer 3 having characters or patterns, an adhesive layer 4, and a layer 5 comprising a material for contacting a resin in the molded article are laminated together. On the other surface of the sheet 2, a tape layer 7 having sticking agent layers on both surfaces thereof and a mold release layer 6 are laminated to form the decorative member 1. Subsequently, the **planar** decorative member 1 is adhered to a cavity 9 of a fixed metal mold 8 by the tape layer 7 having sticking layers on both surfaces thereof after the mold release paper 6 is peeled and fixed thereon. Next, a movable metal mold 10 is clamped to the fixed metal mold 8 and a synthetic thermoplastic resin or a rubber is injected into the

cavity 9 to form a molded article having the decorative member 1 inserted therein and the adhesive layer 7 is removed from the decorative material 1 to obtain the product.

Kondou et al. fails to teach or suggest the use of flock as the decorative layer, the use of a thermosetting adhesive as the adhesive layer, laminating a flocked transfer sheet, the thermosetting adhesive, and backing film together, forming the mold insert into a three-dimensional shape, and the thermoset adhesive being thermoset before contact of the mold insert with the resin.

Moriyama et al.

Moriyama first recognizes the problem in the art of obtaining a desired adhesion between an adhesive and/or a substrate to a molding resin. For example, Moriyama teaches that it was conventional to affix “lining material 2 to the back surface side of a skin 1 made of cloth and foam molding a foam molding resin to the back surface side of this lining material 2 to form a foamed body 3, as shown in Figure 1.” (Emphasis supplied.) However, Moriyama notes that “[w]hen skin is made of cloth, moldability is poor because fiber stretchability is poor.” (Emphasis supplied.) In addition, Moriyama teaches that when another substrate, such as vinyl chloride or rubber, is used, “adhesion with the foamed body is poor.” See page 2 of the English translation of Moriyama. Even further, Moriyama teaches away from the use of a backing material (lining material 2) because the lining material 2 “has a disadvantage in that it increases thickness of skin 1 and makes the surface less comfortable.”

To provide a better adhesion between the flock and adhesive and the resin, Moriyama proposes injecting a foamable synthetic resin onto a flocked skin 11, setting a top force, and allowing the resin to foam to form a molded article having the skin 11 fused to the molded foam body 18. The skin 11 comprises a thin layer 12 made from a thermoplastic resin, such as an olefin sheet, and flocking material 13 that has been electrostatically flocked on a top surface side of the thin layer 12. “Flocking material 13 is flocked with skin 11 in a flat state and therefore, the flocked state is good and flocking can be firmly anchored to thin layer 12 by performing

brushing treatment, chemical treatment, and the like *after* flocking.” See page 3 of English translation (emphasis added.) Thus, the thin layer 12 **is** the adhesive layer.

The resulting foamed-molded body is chiefly obtained by allowing the resin solution to foam. See pages 2-3 of the English translation of Moriyama. Moriyama states that the thin “layer 12 of the above-mentioned skin 11 is **melted** by the heat of foaming and the heat of curing that are generated by the foam molding of this foamed body 18 so that thin layer 12 and foamed body 18 fuse together.” *Id.* (Emphasis supplied.)

Moriyama relies on a melt bond between the thermoplastic thin layer 12 and the resin as key to obtaining the desired adhesion between the flock and resin. Moriyama does not provide any teaching or suggestion of a polymeric backing material between a permanent adhesive and a resin to solve the problem of insufficient adhesion of an adhesive to a resin. Instead, Moriyama teaches only that the use of fabric/cloth/rubber/vinyl chloride do not adequately address the problem and that foaming the resin and melting the thermoplastic sheet is critical to the invention. Moriyama, however, is wholly silent to, and teaches away from, solving the problem of insufficient adhesion between an adhesive and the resin through use of a polymeric backing material coupled with a thermoset (unmelted) adhesive. Moriyama et al. further fails to teach or suggest the use of a thermosetting adhesive as the adhesive layer, laminating a flocked transfer sheet, the thermosetting adhesive, and backing film together, forming the mold insert into a three-dimensional shape, and the thermoset adhesive being thermoset before contact of the mold insert with the resin.

Moriyama apparently adheres the flock only to a thermoplastic thin layer 12 (which as noted therefore acts as a permanent adhesive). Therefore, Moriyama fails to teach and to recognize the utility not only of a thermoset adhesive but also of a polymeric backing material in forming a bond between parts of a molded article. The Examiner cannot properly maintain that the claimed polymeric backing material is capable of instant and unquestionable demonstration as being obvious to one of ordinary skill in the art as a way to overcome the problem of forming strong bonds among the parts of a molded article.

*Application Serial No. 10/614,399
Reply to Office Action of January 10, 2007*

The combination of Kondou, et al., and Moriyama fails to teach the use of thermosetting adhesive. First, Kondou et al. fails to recognize that a thermoplastic adhesive will not work with flock because the adhesive will soften during molding, causing the flock to become disoriented and the “feel” and appearance of the article to be marred. Thus, one of ordinary skill in the art would have no reason to select a thermosetting adhesive over a thermoplastic adhesive. Second, Moriyama et al., with which the Examiner combines Kondou et al., explicitly teaches that the resin thin layer 12, which appears to act as an adhesive layer in holding the flock, is thermoplastic so that it will melt bond with the resin. Using a thermoset adhesive would frustrate the purpose of Kondou, et al., as it would *not* melt bond with the resin. The Examiner cannot pick and choose features from patents having contradictory teachings to show that the invention is obvious. This is impermissible hindsight. The combination of Kondou et al. and Moriyama et al. simply fail to teach or suggest the combination of a thermosetting adhesive to resist molding temperatures and maintain flock orientation and plushness with a thermoplastic backing layer that can form a melt bond with the resin.

The Examiner’s counter argument that “applicant’s assertion that thermoplastic adhesives will ‘fail’ is not necessarily accurate” is irrelevant. Applicant’s experience with thermoplastic adhesives is that they have failed and therefore applicant’s independent claim 24 is now limited to thermosetting adhesives to overcome this problem. The prior art simply fails to recognize this problem.

Finally, the Examiner turns to U.S. 4,810,549 to Abrams et al. and U.S. 6,646,022 to Okazaki, et al. Neither patent, however, fails to address the deficiencies of Kondo et al. and Moriyama et al.

Abrams

Abrams is directed to a multicolor flock transfer comprising (a) a base sheet 4 having a surface area coated with a release adhesive 6; (b) precolored flock 8 of at least two different colors that are longer than 0.3 mm having ends adhering to the surface area in the form of predetermined color patterns of a design; and (c) a binding adhesive 10 applied to other ends of

*Application Serial No. 10/614,399
Reply to Office Action of January 10, 2007*

the precolored flock, whereby said predetermined color patterns of the design of the multicolor flock is adapted to be transferred onto a product. The binding adhesive 10 is “a binder adhesive 10 such as a water based acrylic 1 which binds the flock into a unit. The binder may contain an additional adhesive, a hot melt [or thermoplastic adhesive], for binding the transfer to the substrate. In the alternative the hot melt adhesive 12, usually a granular polyester or nylon, may form a separate layer.” (Col. 2, lines 55-61.) This adhesive formulation would melt under the temperatures of molding, potentially impacting adversely the alignment of the flock design and backing film of the present invention and bond strength between the flock design and the molded resin

Abrams fails to overcome the deficiencies of Moriyama because Abrams also does not teach or suggest a polymeric backing film between the molded resin and a permanent adhesive layer nor a thermoset permanent adhesive layer.

Okazaki, et al.

Okazaki, et al., teaches a process of production of a photocuring sheet comprising the steps of coating a mixed solution including a photocuring resin composition (A) and solvent on a substrate sheet (B) and heating the coated substrate sheet (B) to cause the solvent to vaporize, wherein the coated substrate sheet (B) is not heated continuously for 20 seconds or more to a temperature equal to or higher than a glass transition temperature of a resin ingredient (b) comprising a main ingredient of the substrate sheet (B). A photocuring insert molding sheet comprising a printed layer and/or a deposited layer and an adhesive layer and a primer sheet formed on a substrate sheet (B) side of the photocuring sheet may be manufactured. Okazaki, et al., further teaches a process of production of an insert molded article comprising the steps of inserting and arranging any of the above photocuring sheets, any of the above photocuring decorative sheets, or any of the above photocuring insert molding sheets so that the photocuring resin composition side faces the inner wall of a mold, closing the mold, injecting a molten resin into the mold, and allowing the resin to solidify to form a resin molded article with a photocuring

*Application Serial No. 10/614,399
Reply to Office Action of January 10, 2007*

sheet, photocuring decorative sheet, or photocuring insert molding sheet arranged on its surface, and irradiating light to photocure the photocuring resin composition on the surface of the molded article.

Okazaki, et al., further teaches, at col. 21, lines 1-18, the use of a woven fabric or foamed layer to provide gas permeability to gas produced from the molding resin and, at col. 21, lines 19-67, forming the mold insert into a three dimensional shape before contact with the resin.

Okazaki, et al., fails to teach the use of flock as the decorative layer, the use of a thermosetting adhesive as the adhesive layer, a polymeric backing film, laminating a flocked transfer sheet, the thermosetting adhesive, and backing film together, and the thermoset adhesive being thermoset before contact of the mold insert with the resin. Okazaki, et al., specifically teaches, in order of appearance, a printed layer, a primer layer, an adhesive layer, a deposited layer, and a photocuring sheet.

The Examiner counters as follows: (i) that applicant is arguing the references individually not collectively; (ii) that it would be obvious to select a thermoset adhesive for the decorative layer of Kondou, et al., in the combination of Kondou, et al., and Moriyama; and (iii) that applicant is incorrect in asserting that a thermoplastic adhesive will not work because such adhesives will not melt “as long as the melting temperature of said adhesive is above the temperature of the mold”. The flaw in the Examiner’s argument is that she disregards the teachings of Moriyama that the thermoplastic film must melt bond to the foamed resin or else the purpose of the Moriyama invention would be frustrated. For this reason, it would not be obvious to one of ordinary skill in the art to combine the teachings of Kondou, et al., and Moriyama to produce the claimed invention.

Accordingly, the pending claims are allowable.

The dependent claims provide additional reasons for allowance.

By way of example, claim 29 requires the forming step to follow the thereafter laminating step, the three-dimensional shape of the mold insert to be self-aligning and self-locating in the mold, the mold insert to retains the three-dimensional shape after the forming step and before

positioning in the mold, and the positioning step to follow the forming step. Dependent claim 30 requires a release sheet to be affixed to a first surface defined by the flock fibers and the thermosettable adhesive layer to an opposing second surface defined by the flock fibers and the three-dimensional shape of the backing film to prevent dislodgment of the mold insert from a desired position in the mold during the introducing step. In contrast, Kondo, et al., is directed to a planar mold insert and requires a double-sided tape layer 7 and mold release paper 6 to collectively maintain the position of the mold insert in the mold during resin introduction.

Dependent claim 31 requires the laminating step to comprise the substeps:

heat applying the thermosetting adhesive to the flocked release sheet to form an intermediate transfer, wherein the thermosetting adhesive is in the thermoplastic state after the heat applying step;

cutting the intermediate transfer into wanted and unwanted portions, the wanted portion having a final desired shape;

removing the unwanted portions leaving the wanted portion of the intermediate transfer; laminating the wanted portion to the backing film to form the mold insert.

Dependent claim 32 requires the laminating step to comprise the substeps:

contacting the adhesive film with the backing film to form an intermediate assembly, the adhesive film, after the contacting step, being located only in a desired area of the backing film and having a final desired shape for the mold insert; and

thereafter laminating the intermediate assembly to the flocked transfer sheet, wherein a first set of flock fibers on the flocked transfer sheet adhere to the adhesive film and a second set of flock fibers on the flocked transfer sheet do not adhere to the adhesive film.

Dependent Claim 51 requires the backing film and resin to have different chemical compositions. Kondou, et al., fails to teach that the compositions of the resin and the layer 5 are different. In fact, Kondou et al. does not appear to teach the compositions of the layer 5 and the resin.. Moriyama et al. further fails to teach or suggest that the compositions of the resin and adhesive are different.

Application Serial No. 10/614,399
Reply to Office Action of January 10, 2007

Applicant has added new claims 52-56.

New dependent claim 52 requires the mold insert to comprise a carrier sheet, flock fibers, and a release adhesive adhering the flock fibers to the carrier sheet, the thermosetting adhesive film to be positioned between the flock fibers and backing film, and, in the introducing step, the carrier sheet to be in direct contact with the mold surface. In contrast, Kondo, et al., teaches that a mold release paper 6 and adhesive layer is positioned between the tape layer 7 and mold interior surface.

The cited references fail to teach or suggest at least the following italicized features of independent claim 53:

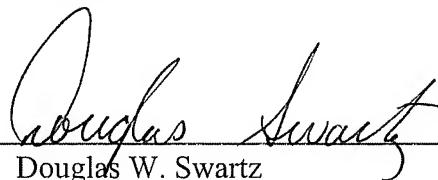
53. A method, comprising:
forming a plurality of adhesive-containing areas and at least one area free of adhesive on a first surface of a backing film;
applying flock to the adhesive-containing areas of the backing film but not to the at least one area of the backing film that is free of adhesive; and
forming the backing film into a mold insert for placement in a mold.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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